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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/994,610 | 11/28/2001 | Kuninori Kawabata | 100353-00086 | 9276 |

7590 03/29/2004

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EXAMINER

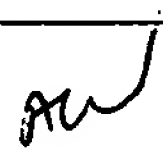
PHAM, LY D

| ART UNIT | PAPER NUMBER |
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2818

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--|---|
| Office Action Summary | Application No. 09/994,610 | Applicant(s) KAWABATA ET AL. | |
| | Examiner Ly D Pham | Art Unit 2818 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's Amendment filed January 05, 2004 has been entered. Claim 1 has been amended.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Hwang et al. (US Pat 5,777,491).

Regarding **claim 1**, Hwang et al. disclose a semiconductor device comprising:

data lines over which data are transferred (inherent in all semiconductor devices);

a drive circuit driving the data lines in operating modes (col. 3, lines 23 – 25, circuit family for providing desired logic functions), the operating modes including a dynamic operating mode in which data lines are precharged prior to transfer of data over said data lines (col. 1, lines 61 – 65, and line 66 – col. 2, line 4, note also that dynamic mode inherently requires precharge operation), and a static operation mode in which the data lines are not precharged prior to transfer of data over said signal lines (col. 3, lines 29 – 31).

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4. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Hsieh et al. (US Pat 4,878,101).

Regarding **claim 1**, Hsieh et al. disclose a semiconductor device comprising:

data lines over which data are transferred (inherent in all semiconductor devices);

a drive circuit driving the data lines in operating modes (fig. 4, 51), the operating modes including a dynamic operating mode in which data lines are precharged prior to transfer of data over said data lines (col. 6, lines 15 – 17), and a static operation mode in which the data lines are not precharged prior to transfer of data over said signal lines (col. 6, lines 20 – 22).

Regarding **claim 2**, Hsieh et al. further disclose the semiconductor as claimed in claim 1, further comprising a memory cell array to which data lines are connected (fig. 4, cell array 52), data read from the memory cell array being transferred over the data lines (fig. 4, bit lines 56).

5. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuo (US Pat 4,766,473).

Regarding **claim 1**, Kuo disclose a semiconductor device comprising:

data lines over which data are transferred (inherent in all semiconductor devices);

a drive circuit driving the data lines in operating modes (fig. 5, 51), the operating modes including a dynamic operating mode in which data lines are precharged prior to transfer of data over said data lines (col. 5, lines 60 – 62), and a static operation mode in which the data lines are not precharged prior to transfer of data over said signal lines (col. 5, lines 66 – 68).

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Regarding **claim 2**, Kuo further discloses the semiconductor as claimed in claim 1, further comprising a memory cell array to which data lines are connected (fig. 5, cell array 52), data read from the memory cell array being transferred over the data lines (fig. 5, bit lines 55).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3 – 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh et al. (US Pat 4,878,101) in view of Furutani et al. (US Pat 5,305,261).

Regarding **claim 3**, Hsieh et al. disclose the semiconductor device as claimed in claim 1, except further comprising the additional limitations as claimed in claim 3. However, Furutani et al. have shown the test dedicated line (col. 5, lines 10 – 12), a predetermined test of the semiconductor device being performed using the test-dedicated line and the signal lines (fig. 10, test data input 922 connect to signal lines).

Therefore, it would have been obvious, to one of ordinary skill in the art, at the time the invention was made, to combine the features shown by Furutani et al. to the disclosure by Hsieh et al., to ensure error-free operation.

Regarding **claim 4**, Furutani further discloses a circuit receiving the signal lines at inputs thereof and outputting a test result (fig. 10, line test circuit 5 outputs test result, shown error in figure), said test result and a logic level of the test-dedicated line forming a result of the

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predetermined test (dedicated test data line being wired-ANDed implies that its test output has to be a certain logical state).

Regarding **claim 5**, Furutani further discloses a precharge circuit precharging the signal lines and the test-dedicated line (abstract: the semiconductor memory device further includes a load circuit which precharges the internal data transmitting lines to a predetermined potential in a test mode, and a line test circuit which determines existence and nonexistence of a defective memory cell based on the potentials of the internal data transmitting lines).

8. Claims 3 – 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo (US Pat 4,878,101) in view of Furutani et al. (US Pat 5,305,261).

Regarding **claim 3**, Kuo discloses the semiconductor device as claimed in claim 1, except further comprising the additional limitations as claimed in claim 3. However, Kuo has shown the test dedicated line (col. 5, lines 10 – 12), a predetermined test of the semiconductor device being performed using the test-dedicated line and the signal lines (fig. 10, test data input 922 connect to signal lines).

Therefore, it would have been obvious, to one of ordinary skill in the art, at the time the invention was made, to combine the features shown by Furutani et al. to the disclosure by Kuo, so that error-free memory operation is achieved.

Regarding **claim 4**, Furutani further discloses a circuit receiving the signal lines at inputs thereof and outputting a test result (fig. 10, line test circuit 5 outputs test result, shown error in figure), said test result and a logic level of the test-dedicated line forming a result of the

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predetermined test (dedicated test data line being wired-ANDed implies that its test output has to be a certain logical state).

Regarding **claim 5**, Furutani further discloses a precharge circuit precharging the signal lines and the test-dedicated line (abstract: the semiconductor memory device further includes a load circuit which precharges the internal data transmitting lines to a predetermined potential in a test mode, and a line test circuit which determines existence and nonexistence of a defective memory cell based on the potentials of the internal data transmitting lines).

9. Claims 2 – 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hwang et al. (US Pat 4,878,101) in view of Furutani et al. (US Pat 5,305,261).

Regarding **claim 2**, although Hwang et al. did not clearly show the semiconductor device as claimed in claim 1, further comprising a memory cell array to which data lines are connected, data read from the memory cell array being transferred over data lines. However, such feature has been shown by Furutani et al. (fig. 1, memory cell array 3) to which the signal lines are connected (signal lines IO in fig. 10), data read from the memory cell array being transferred over the signal lines (fig. 10, test data input 922 transferred over the signal lines).

Therefore, it would have been obvious, to one of ordinary skill in the art, at the time the invention was made, to combine the feature shown by Furutani et al., to the circuit shown by Hwang et al., so that memory system with flexible operational mode capabilities is achieved.

Regarding **claim 3**, Hsieh et al. disclose the semiconductor device as claimed in claim 1, except further comprising the additional limitations as claimed in claim 3. However, Furutani et al. have shown the test dedicated line (col. 5, lines 10 – 12), a predetermined test of the

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semiconductor device being performed using the test-dedicated line and the signal lines (fig. 10, test data input 922 connect to signal lines).

Regarding **claim 4**, Furutani further discloses a circuit receiving the signal lines at inputs thereof and outputting a test result (fig. 10, line test circuit 5 outputs test result, shown error in figure), said test result and a logic level of the test-dedicated line forming a result of the predetermined test (dedicated test data line being wired-ANDed implies that its test output has to be a certain logical state).

Regarding **claim 5**, Furutani further discloses a precharge circuit precharging the signal lines and the test-dedicated line (abstract: the semiconductor memory device further includes a load circuit which precharges the internal data transmitting lines to a predetermined potential in a test mode, and a line test circuit which determines existence and nonexistence of a defective memory cell based on the potentials of the internal data transmitting lines).

Allowable Subject Matter

10. **Claim 6** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

The prior arts teach a semiconductor memory device as claimed in claims 1 – 5, except the precharge circuit precharging the data lines and the test-dedicated line in the dynamic operation mode only.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. When responding to the office action, Applicant(s) are advised to provide the examiner with the page and line numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

14. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02(b)).

15. Any inquiry concerning this communication on earlier communications from the examiner should be directed to Ly Pham, whose telephone number is 703-305-4862. The examiner can normally be reached on Monday – Friday from 8:30am to 5:00pm, alternate Friday off. The examiner's supervisor, David Nelms, can be reached at 703-308-4910. The fax number for the organization where this application or proceeding is assigned is 703-308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Ly Pham



March 22, 2004



David Nelms
Supervisory Patent Examiner
Technology Center 2800